NOTES

ON Monday a preliminary meeting was held in the Mansion House in furtherance of the scheme of the International Electrical Exhibition which it is proposed to hold at the Crystal Palace on a very large scale in the winter months. There were present, among others, Mr. William Spottiswoode, Mr. John Holms, M.P. (one of the Lords of the Treasury), Mr. Mungo M'George (Chairman of the Crystal Palace Company), Capt. Douglas Galton, C.B., Dr. Gladstone, F.R.S., Col. Gouraud, Dr. J. Hopkinson, F.R.S., Mr. C. V. Walker, F.R.S., and many more. Mr. Mungo M'George, in moving the appointment of an influential honorary council to advise with the directors of the Crystal Palace in carrying out the proposed exhibition, said that no effort should be wanting on their part to make the scheme a great scientific and commercial success. The honorary council was formed of those present, and, among others, the Lord Mayor Elect, the President of the Institute of Civil Engineers, Dr. C. W. Siemens, Prof. Adams, Sir H. Cole, Prof. Fleeming Jenkin, Mr. W. Crookes, Sir E. J. Reed, M.P., Sir Edward Watkin, M.P., Sir Herbert Sandford, and many more. Major Flood Page, the manager of the Crystal Palace, read a report, which stated that communications have been opened with the leading exhibitors at the Electrical Exhibition in Paris, and with others who have made the development of electricity their special study; and, although but a very short period has elapsed since the first steps were taken, the responses have been such as to render it certain that an effective and varied display will be made at the Crystal Palace. Most of the best-known systems of electric lighting will be represented—among others, the Siemens, Brush, British Electric, Electric Light and Power Generator Company's systems, the Joel, Pilsen, Edison, Swan, Maxim, Weston, Lontin, Rapieff, and Gerard lights; and various new lamps will be exhibited for the first time in public. The storage of electricity will, it is hoped, be illustrated by Faure's and De Meritens' secondary batteries. Telephones, which are not nearly so much used in England as elsewhere, will be strongly represented; and the various applications of electricity as a motive power will be seen in Trouvé's boats and other interesting exhibits. Many eminent scientific men have expressed great interest in the undertaking, and intend to become exhibitors. Colonel Gouraud promised all the help of his fellow-countrymen towards the success of the Exhibition, which, though following that at Paris very sharply, might be more attractive to American exhibitors, for it would be one stage nearer home, and its arrangements would be conducted in a language which the exhibitors could understand. Capt. Galton expressed a hope that military and submarine electricity would be suitably and adequately represented on the occasion. Sir James Anderson also supported the proposal, which was carried unanimously. Major Flood Page then read a *résumé* of the arrangements for the exhibition, which stated that the principal objects to be admitted were comprised in the following:—Apparatus used for the production and transmission of electricity; magnets, natural and artificial; mariners' compasses; applications of electricity—to telegraphy and the transmission of sounds, to the production of heat, to lighting and the production of light, to the service of lighthouses and signals, to apparatus giving warning, to mines, railways, and navigation, to military art, to fine arts, to galvano-plastic, electro-chemistry, and to chemical arts, to the production and transmission of motive power, to mechanical arts and horology, to medicine and surgery, to astronomy, meteorology, geodesy, to agriculture (in its application to industries), to apparatus for registering, to domestic uses, lightning conductors. Major Page earnestly hoped that Mr. Fawcett would allow the Post Office exhibit at Paris to be shown at the Crystal Palace, and that Mr. Childers, as Secretary of State for War, would give aid to experiments in electricity as applied to military purposes.

AT the first meeting of this session of the Birmingham Philosophical Society, the Rev. H. W. Crosskey (secretary) read the annual report, in which it was stated that the Council last year reported that Dr. George Gore, F.R.S., had accepted the position offered him, and that the amount of 150*l.* per annum had been allotted to him in order that he might have greater facilities for continuing in Birmingham his original researches. Dr. Gore had forwarded a report stating that since he had been intrusted with grants from the Birmingham Endowment of Research Fund, he had made, partly with the aid of those grants, the following researches in physics and chemistry, which had been communicated to the Royal Society, and published, as follows:—Thermo-electric behaviour of aqueous solutions with platinum electrodes; influence of Voltaic currents on the diffusion of liquids; experiments on electric osmose; phenomena of the capillary electroscope; electric currents caused by liquid diffusion of osmose; influence of Voltaic currents on diffusion of liquids; and phenomena of the capillary electroscope. He hoped before long to submit to the Philosophical Society an original communication. In addition to the before-mentioned researches, and as an entirely separate matter, he had been aiding the cause of original research by preparing for publication a small book on "The Scientific Basis of National Progress," and it was now being printed.

A NEW zoological station is to be established at Banyuls-sur-Mer, on the Mediterranean, at the end of the natural prolongation of the mole at the beach of Fontaulé. The building will be of considerable size, have several apartments, and be well lighted. It is expected that the laboratory will be ready for work by January. M. Lucaze-Duthiers intends to illuminate the aquarium by electricity. This station will really be an annexe to that at Roscoff, permitting the study of marine zoology to be carried on in winter, when it has often to be suspended on the colder coast of the Atlantic. The municipality of Banyuls, mostly very humble individuals living in an out-of-the-way place, have lent cordial and substantial support to the enterprise.

THE arrangements for the festival in honour of the twenty-fifth anniversary of Virchow's appointment as Professor to the University of Berlin—an anniversary which coincides with his sixtieth birthday—are now being made, we learn from the *Lancet*. An influential committee, comprising the names of Prof. Bastian, Director of the Royal Ethnological Museum, Town-Councillor Friedel, Prof. Küster, Dr. Voss, Herr Ritter, &c., have asked permission of the Town Council to grant the use of the large hall in the Rathhaus and to defray the cost of the decorations, as on the occasion of the banquet to Dr. Schliemann. The 19th of November has been fixed for this festival. The most interesting part of the proceedings will be the handing over to Prof. Virchow the title-deeds of a new institution to be devoted to the prosecution of scientific researches especially relating to anthropology, of which he will have the full control. As a politician, an anthropologist, and an antiquarian, no less than as a pathologist, Prof. Virchow has claims not on Germany alone, but on the whole of civilised humanity; and we heartily join in the desire to do him honour.

THE first general meeting of the London Sanitary Protection Association was held on Tuesday at the Society of Arts, Adelphi, Prof. Huxley, the president, in the chair. Mr. Holmes, the treasurer, stated that the Association had been in operation only for a few months, and for a certain portion of that time its action had been suspended by legal difficulties. The number of members enrolled up to the 15th of this month was 126, the total contributions, together with a loan of 100*l.*

from Prof. Jenkin, for the purpose of advertising and starting the Association, was 391*l.* 11*s.*, and the total expenditure 346*l.* 3*s.* 6*d.* Prof. Huxley said that, to put it briefly, the Association was a co-operative store for the supply of good advice, and the modest success which had hitherto attended it was very likely due to the antipathy inherent in human nature to the reception of good advice. Their good advice, however, had this peculiarity—that they did not expect anybody to take it unless he liked. His interest in this Association came from the remote connection he once had with medicine and hygiene. Whatever suspicion of knowledge he ever possessed had led him to the conviction, strengthened by every day's experience of life, that when we aggregated close upon 4,000,000 of people on something less than fifty square miles, if we did not take care we should be desolated, not like old London by the plague or black death, but by those other forms of disease, as fatal in their way, which have the terrible peculiarity of being easily disseminated by the means we took to get rid of them, unless those means were perfect. Disagreeable as the old cesspool system was, it was attended with very little danger compared with that which waited upon the water sewage system if that system was imperfect, for then it was an admirably-contrived arrangement for distributing disease and death in our own houses and in the houses of people who lived adjacent. There were two ways of meeting the danger. One was by the action of Government in some shape or other; but in England no one would tolerate the intrusion of Government officials for the purpose of knocking about and looking into everything, and besides, the expense and difficulty of working such a system would put it out of the range of the practicable. The other way was to meet the danger by means of those who supplied a good report, such as that Association would do. Therefore it was for the public good that the Association should become a great one, and its work be carried out as widely as possible.

THE success which has attended Dr. Vines' English edition of Prof. Prantl's "Elementary Text-Book of Botany" has induced the publishers, Messrs. W. Swan, Sonnenschein and Co., to arrange for a companion volume on zoology, viz. an English adaptation of Prof. Claus's "Handbuch der Zoologie," which Mr. Adam Sedgwick of Trinity College, Cambridge, has undertaken to make. Hitherto this work has appeared without illustrations in Germany; but for the present edition between 500 and 600 drawings have been prepared by Prof. Claus himself. The book is announced to appear next spring. We learn also that Dr. Vines has undertaken for the same firm a "School Botany," covering the ground commonly taken up in the school course. The important treatise on the "Theory and Practice of the Microscope," by Professors Naegeli and Schwendener, which Messrs. Sonnenschein and Co. have had in the press for the past three years, has at length reached completion. It is announced for issue next month.

IT is stated that the Report of the Commission appointed in 1879 to inquire into the sanitary condition of the cemeteries in and around Paris negatives, generally, the popular belief in the noxious influences of great burial-places. The composition of the air in the cemeteries, according to M. Schutzenberger, is not distinguishable from that of arable lands.

UNDER the title of "Prehistoric Devon" (the opening address of the seventieth session of the Plymouth Institution), Mr. R. N. Worth, the president, has brought together in an interesting form many valuable data and references on the subject from all quarters.

IN No. 9 of the *Chrysanthemum*, the monthly magazine for Japan and the East, to which we have already referred, published in Yokohama (London: Trübner), there is the the first instalment of a useful vocabulary of Aino words by Mr. W. Dening.

MISS E. A. ORMEROD, authoress of the "Manual of Injurious Insects," delivered a lecture on Thursday afternoon to the students of the Royal Agricultural College, Cirencester, on the methods of investigating attacks of insects on crops, and the general treatment to be employed. The lecture was profusely illustrated by enlarged diagrams, and was enthusiastically received by the students and their friends. The lecture will be published in full.

THE death is announced, at the age of fifty-three years, of Mr. James Craig Niven, curator of the Hull Botanic Gardens.

THE Abbé Moigno's journal, *Les Mondes*, has again, we are glad to notice, passed successfully through a crisis. A fresh start has been made, the old title "Cosmos" becomes more prominent, and a bright-coloured cover has been added. Better paper, more illustrations, and re-arrangement of matter will, we trust, procure the journal increased support.

AT the meeting of the Institution of Mechanical Engineers at the Memorial Hall, Albert Square, Manchester, to-morrow, the following papers will be read and discussed:—On Bessemer steel plant, with special reference to the Erimus Works, by Mr. C. J. Copeland of Barrow-in-Furness; on compressed air upon tramways, by Mr. W. D. Scott-Moncrieff of London; on meters for registering small flows of water, by Mr. J. J. Tylor of London.

J. B. LIPPINCOTT AND CO. have in the press "The Honey-Ants of the Garden of the Gods, and the Occident Ants of the American Plains," by the Rev. Henry C. McCook, D.D.

A VIOLENT shock of earthquake, lasting three seconds, occurred at Agram at 10 p.m. on the 23rd inst.

La Nature of October 22 has a long article, with microscopical illustrations, on the drinking water of Paris.

SOME interesting facts are brought out in a paper by M. C. Nielsen of Christiania on the impression produced upon animals by the resonance of the vibration of telegraph wires. It is found that the black and green woodpeckers, for example, which hunt for insects in the bark and in the heart of decaying trees, often peck inside the circular hole made transversely through telegraph posts, generally near the top. The phenomenon is attributed to the resonance produced in the post by the vibration of the wire, which the bird mistakes as the result of the operations of worms and insects in the interior of the post. Every one knows the fondness of bears for honey. It has been noticed that in mountainous districts they seem to mistake the vibratory sound of the telegraph wires for the grateful humming of bees, and, rushing to the post, look about for the hive. Not finding it on the post, they scatter the stones at its base which help to support it, and, disappointed in their search, give the post a parting pat with their paw, thus showing their determination at least to kill any bees that might be about it. Indisputable traces of bears about prostrate posts and scattered stones prove that this really happens. With regard to wolves, again, M. Nielsen states that when a vote was asked at the time for the first great telegraph lines, a member of the Storthing said that although his district had no direct interest in the line proposed, he would give his vote in its favour, because he knew the lines would drive the wolves from the districts through which they passed. It is well known that to keep off the ravages of hungry wolves in winter the farmers in Norway set up poles connected together by a line or rope, under which the wolves would not dare to pass. "And it is a fact," M. Nielsen states, "that when, twenty or more years ago, telegraph lines were carried over the mountains and along the valleys, the wolves totally disappeared, and a specimen is now a rarity." Whether the two circumstances are causally connected, M. Nielsen does not venture to say.

WE are informed that the lists of papers, &c., appended to Mr. C. R. Markham's "Fifty Years' Work of the Geographical Society," referred to in our leading article of last week, were not compiled by Mr. Rye.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* ♀), from India, presented by Mr. G. R. J. Glennie; a Rhesus Monkey (*Macacus erythræus* ♀) from India, presented by Miss Richardson; a Malbrouck Monkey (*Cercopithecus cynosurus* ♂) from West Africa, presented by Mr. J. Pope; a Black-faced Kangaroo (*Macropus melanops* ♂) from Australia, presented by Miss Drax; a Black-headed Gull (*Larus ridibundus*), European, presented by Master Rew Lloyd; two Common Kestrels (*Tinnunculus alaudarius*), British, presented by Masters John and Charles Godfrey; a Snow Bunting (*Plectrophanes nivalis*), North European, presented by Mr. H. A. Macpherson; a —— Monkey (*Macacus*, sp. inc. ♂) from Hainan Island, China, deposited; a Sooty Mangabey (*Cercocebus fuliginosus* ♂) from West Africa, an Ariel Toucan (*Ramphastos ariel*) from Brazil, a Naked-footed Owlet (*Athene noctua*), European, an Ornamental Hawk Eagle (*Spizaëtus ornatus*), a Black Tortoise (*Testudo carbonaria*), an Argentine Tortoise (*Testudo argentina*) from South America, two Radiated Tortoises (*Testudo radiata*) from Madagascar, purchased; a Gaimard's Rat Kangaroo (*Hypsiprymnus gaimardi*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

COMET 1881 *f* (DENNING).—From the elements of the orbit of this comet it is evident that it was a much more conspicuous object about the time of perihelion passage in the middle of September, than when it was detected by Mr. Denning on the morning of October 4, and its not having been sooner discovered can only be attributed to the general prevalence of clouded skies in September. Mr. Denning writes us that from September 2 to 29 he could not make a single observation before sunrise, owing to cloudy weather, but that on the mornings of September 29 and October 1 he missed the comet "in some unaccountable manner." The comet having escaped in September, the systematic examination of the sky, which is now pursued by him, is thus explained.

It ought now to be possible to decide by calculation from accurate positions, whether the comet be one of short period or not. The resemblance of the orbit to that of the fourth comet of 1819 has been pointed out. That comet was undoubtedly moving in an elliptical orbit of very limited dimensions: a computation founded upon a new reduction of the observations made at the Observatory of Paris, which alone are precise enough for the purpose, has led Mr. Hind to a period of revolution of 5·155 years, which is somewhat longer than that deduced by Encke in 1820 from the same observations as they were published at the time by Bouvard. At the previous aphelion passage in 1817 the comet would pass in close proximity to the planet Jupiter, and considerable perturbations may have then occurred. In the interval between the perihelion passage of the comet of 1819 and that of Mr. Denning's comet there are twelve periods of 5·151 years, and the comet would again be greatly disturbed by Jupiter near aphelion in 1853, so that it is possible to explain to a great extent the differences between the orbits of 1819 and 1881, but that the period of revolution should not have undergone material alteration at the same time, may perhaps be considered as an argument against the identity of the comets. However, as we have intimated, the question should soon be decided by direct calculation. Less than a fortnight's observations have been shown in more cases than one to be sufficient to give pretty close approximations to the periods of comets moving in small ellipses, as in the case of De Vico's comet of 1844, for which from only eight days' observations M. Faye inferred a revolution of 5·15 years, the correct one being 5·46 years, or that of Brorsen's comet at its first appearance in 1846, when from ten days' observations Mr. Hind assigned a revolution of 5·519 years, the true one being 5·569 years.

The following positions of Mr. Denning's comet are from an ephemeris calculated by Dr. Oppenheim for Berlin midnight:—

		R.A. h. m. s.	Decl. °	Log. distance from Sun.	Earth.
October	28	10 10 0	+14 51·6		
	30	10 13 1	14 52·2	0·0685	0·0411
November	1	10 15 52	14 53·1		
	3	10 18 35	14 54·5	0·0888	0·0503
	5	10 21 7	14 56·4		
	7	10 23 30	14 58·7	0·1084	0·0582
	9	10 25 44	15 1·4		

The intensity of light on November 9 is less than half that on the day of discovery.

HERSCHEL'S "GARNET SIDUS."—This variable star, the μ Cephei of our Catalogues, appears to require more regular observation than, to judge from published statements, it has of late received, and is an object well deserving the attention of some one of our many amateurs. No doubt satisfactory observations are attended with some difficulty from the high colour of the star, but on that account the results of a single observer may perhaps be deemed more reliable. Mr. Webb, in the new edition of his "Celestial Objects for Common Telescopes," assigns it a period of five or six years, which is assuredly a mistake. It has been included amongst the irregular variables, and its period may be usually about 430 days, instead of several years. Argelander, as an approximation to the period, gives 431·8 days, from observations between 1848 and 1863, but there are very material perturbations. He considered that the period of increase of brightness is greater than that of decrease in the proportion of 4 to 3. The position of μ Cephei for 1882 is in R.A. 21h. 39m. 53·7s., Decl. + 58° 14′ 21″.

This star, which was not observed by Flamsteed, is the first of Ptolemy's ἀμόρφωτοι, under the constellation Cepheus, which he places in 13° 40′ of Pisces with 64° north latitude. If we carry back the position of the variable star from the second Radcliffe catalogue to the reputed epoch of Ptolemy's catalogue—the first year of Antoninus, or A.D. 138—we find its longitude to be in 14° 16′ of Pisces, with north latitude 64° 7′, so that, as was first shown by Argelander (*Astron. Nach. Erganzungsheft*), the identity is beyond doubt.

GEOGRAPHICAL NOTES

THE St. Petersburg Correspondent of the *Times* writes as follows:—The question of the existence of volcanoes in Central Asia, especially on the Kuldja frontier, has always been a matter of doubt and discussion among geologists and Russian explorers. The Governor of Semiretchinsk, Gen. Kolpakofsky, had already fitted out expeditions to settle the question—once in 1878, and again in 1879; but owing to the difficulties of reaching the mountains, which the Chinese consider impassable, and also to the disorders which were then taking place in Kashgar, both expeditions were unsuccessful. This year General Kolpakofsky again set himself to the task, and now reports that he has at last discovered the perpetual fires in the Thian Shan range of mountains. He telegraphs that the mountain Bai Shan has been found twelve miles north-east of the City of Kuldja, in a basin surrounded by the massive Ailak Mountains, and that the fires which have been burning there from time immemorial are not volcanic, but proceed from burning coal. On the sides of the mountain there are caves emitting smoke and sulphurous gas. The *Official Messenger*, referring to this interesting telegram, observes that the question as to the existence of volcanic formations in Central Asia, which has so long agitated the learned world, is now irrevocably decided in the negative, and bears the testimony of many Russian explorers. Mr. Schuyler also, in his "Turkistan," mentions that these perpetual fires in the mountains referred to by Chinese historians were considered by Severtzoff, who explored the region, as being caused by the ignition of the seams of coal or the carburetted hydrogen gas in the seams. The same author further mentions that Capt. Tosnofskey, another Russian explorer, was told of a place in the neighbourhood from which steam constantly rose, and that near this crevice there had existed from ancient times three pits, where persons afflicted with rheumatism or skin diseases were in the habit of bathing.

MR. DORWARD, of the China Inland Mission, has lately made a lengthened journey in the Chinese province of Hunan, of which he has sent home somewhat full particulars. He was absent from Wuchang, opposite Hankow, on the Yang-tsze-kiang, for five and a half months, and visited almost every part of this